Fairfax County VIRGINIA

Ceremony Program


Fairfax County
VIRGINIA

AGENDA

1. Opening Introduction

   Gordon Jarratt
   Enterprise Systems Division Director, Department of Information Technology

2. Featured Speakers

   Sharon Bulova
   Chairman of the Board of Supervisors, County of Fairfax Virginia

   Tom Conry
   GIS & Mapping Services Branch Manager

3. Presentation of Awards

   Sharon Bulova
   Dave Molchany
   Gordon Jarratt
   Tom Conry

4. Closing

CONTENTS

I. Agenda

II. Awards Category Descriptions

III. Complete List of Excellence Awards Entries

IV. Awardees by Category with Project Description

Forward

The use of GIS technologies in the County has led to the work that you see honored here at the GIS Excellence Awards and posted in the Awards Gallery.

As part of the GIS Day celebrations, the GIS Excellence Awards are given annually for outstanding uses of GIS technology by Fairfax County employees and agencies. The awards were created to recognize and celebrate those County employees and agencies that are effectively and innovatively using GIS technology. This year, over 40 submissions were received for the seven categories of recognition.

As was done previous years, a judging panel from outside Fairfax County Government donated many hours of their time evaluating the entries. This year, judges were from the Northern Virginia Community College GIS Certificate Program and Prince William County's Geographic Information Systems Division.

The awards have two categories recognizing individual and/or team accomplishments and five categories recognizing agency accomplishments. The following page lists the categories and their descriptions.

2014 GIS Excellence Award Categories

Individual/Team Categories

FIRST, SECOND, AND THIRD PLACE AWARDS FOR EACH CATEGORY

Best GIS Cartographic Product/Presentation

This award is intended to showcase the power of GIS tools in creating accurate, instructive, and visually-pleasing maps. Criteria used to evaluate the entries include:

- clarity of purpose and intent
- the use of GIS tools, methods, and operations to go beyond basic cartography
- visual balance and appeal
- inclusion of necessary map elements and conventions
- quality control for typos or other errors

Best Use of GIS for Analysis

This award is intended to showcase the power of GIS tools in undertaking sophisticated spatial analyses that aid County operations and answer significant questions. Criteria used to evaluate the entries include:

- complexity of analysis; use of tools, scripting, model-builder, etc.
- ingenuity/creativity/originality of GIS methods used
- project benefits to a team or department
- effective demonstration of the information and insight gained (e.g., diagrams, maps, presentations, report, text)

Agency Categories

ONE AWARD PER CATEGOR*Y*

Best Use of GIS on the Web

This award is presented to the agency that best demonstrates GIS interactivity, maps, and/or data on the internet or County intranet. Criteria used to evaluate the entries include:

- effectiveness of web product in meeting stated purpose
- benefit to the public and/or agency
- demonstration of advanced GIS techniques, including complex data analysis, customization or programming
- incorporation of web product into business practices

Best Use of GIS for Public Outreach

This award is presented to the agency that best utilizes GIS to serve the public with map documents, customer service operations, press relations, or public events. Criteria used to evaluate the entries include:

- effectiveness of the GIS work to the outreach effort
- degree to which a difficult message was clearly communicated
- complexity of cartography, data analysis, customization and/or programming
- adaptability to future expansion/modification
- contribution of GIS as a planning tool for the outreach effort

Most Significant Data Contributor

This award is presented to the agency that has created or refined the most significant spatial data for the County. Criteria used to evaluate the entries include:

- significance of the data for the county and/or agency
- importance to agency's long-term business processes
- level of effort required to create/maintain the data
- sophistication of process to create/maintain the data

Best GIS Integration or Application Development

This award is presented to the agency that has integrated GIS into their operations to the greatest degree and/or has created a significant GIS software application. Criteria used to evaluate the entries include:

- effectiveness of the application/integration in meeting its stated goal
- demonstration of a labor/time savings for staff or the public
- ingenuity/creativity/originality of GIS methods utilized
- ease of use/intuitiveness of the integration/application
- ability to gain insights into data/project/issue as a result of the integration/application

Most Significant Progress

This award is presented to the agency that has demonstrated the most progress in their use of GIS over the past year. Criteria used to evaluate the entries include:

- increase of use of GIS in the agency, either directly or through agency-generated GIS products
- magnitude of the change in GIS use by the agency
- increased agency efficiency as a result of GIS
- demonstration of significant effort to train staff in GIS
- potential for further GIS-related growth

List of All Excellence Award Entries

GIS Cartographic Product/Presentation

Branch Chief Responsibility Areas - Dan White; *DPZ*
Virginia Beech Resource and Beech Bark Disease Extent 2014 - Rachel Griesmer-Zakhar*; DPWES-UF*
West County Trail - Pat Rosend, Liz Cronauer; *FCPA*
New Property Manager Areas - Diane Jenkins; *HCD*
Parks and Trails Wall Map – Buddy Rose; *FCPA*
Tysons Park System Concept Plan - Gayle Hooper; *FCPA*
Housing and Population through the Decades in Fairfax County- Paul Maliszewski; *NCS*
Commercial Revitalization District Map (Annandale) – Chip Galloway, Randy Miller, Bill Hicks; *DPWES-MSMD*
Service Drives Review - Chip Galloway, Bill Schell; *DPWES-MSMD*
Magisterial District Map – Chip Galloway, Emma Gutzler; *DPWES-MSMD*
Lincolnia Planning District Existing Conditions Mapping - Harry Rado, Jennifer Garcia, Tom Merce; *DPZ*
EMS Response Time Performance by Fire Box: FY2014 – Shelby D. Zelonis; *FRD*

Use of GIS for Analysis

Targeting Accessible Waters for Volunteer Cleanups – John Burke; *DPWES-SPD*
Clients by Zip Code - Lucinda Blasco; *FS*
Automating the Blue Books and Run Order Display in the Computer Aided Dispatch System Utilizing GIS Models and Python Scripting - Christopher McCarthy; *DIT-PSC*
Spatiotemporal Geovisualization of Repeated Sinkhole Complaints 1984-2014 for the Determination of Storm Pipe Rehabilitation Priority - Andrew Nault; *DPWES-MSMD*
Snow Plow Route determined by Optimized Route Planner - Chip Galloway, Karen Rubal; *DPWES-MSMD*
Development of a GIS Toolkit to support Hydrologic and Water Quality Modeling (HWQM) and drainage area characterization of ecological sampling sites - Joseph P. Riley-Ryan, John Burke; *DPWES-SPD*
Maximizing Battalion Chief Coverage in Fairfax County using Location-Allocation - Shelby D. Zelonis; *FRD*
Carbon Monoxide Incidents - Maura M. Ardike, Shelby D. Zelonis; *FRD*

Use of GIS for Public Outreach

A Cultural History Tour of Old Colchester Park and Preserve
- Fairfax County Park Authority
Seven Corners Walkshed Analysis
- Office of Community Revitalization

Use of GIS on the Web

The Fairfax Forward Website
- Department of Planning and Zoning

FY 2015 Deer Management Map
- Fairfax County Park Authority

A Cultural History Tour of Old Colchester Park and Preserve
- Fairfax County Park Authority

Demographic Interactive Mapper
- Department of Neighborhood and Community Services

Fairfax County Fire & Rescue Department ArcGIS Online Website
- Fire and Rescue Department

Significant Data Contributor

Constructing Interior 3D Models of Fairfax County's School Buildings from CAD .DWG Files
- Fairfax County Police Department

Park Authority data layers
- Fairfax County Park Authority

Existing Land Use
- Department of Neighborhood and Community Services

Voluntary Boundary Line Adjustment Agreement by and between the City of Falls Church and Fairfax County
- Department of Public Works and Environmental Services – Land Survey Branch

GIS Integration or Application Development

A Python Script Tool for ArcGIS to Create 3D Structures for the Historic Reconstruction
- Fairfax County Park Authority

Automating the Blue Books and Run Order Display in the Computer Aided Dispatch System Utilizing GIS Models and Python Scripting
- Department of Information Technology – Public Safety & Communication

Existing Land Use
- Department of Neighborhood and Community Services

MS4 Business Application
- Department of Public Works and Environmental Services – Stormwater Planning Division

Non-Native Invasive Species Prioritization Data Collection Modernization
- Fairfax County Park Authority

Fairfax County Fire & Rescue Department ArcGIS Online Website
- Fire and Rescue Department

Planning Division POD Map Book
- Department of Planning & Zoning

Significant Progress

Office of Elections
Department of Public Works and Environmental Services – Land Survey Branch
Department of Planning and Zoning
Fairfax County Police Department
Fairfax County Park Authority

Best GIS Cartographic Product/Presentation

Individual/Team Awardees

Third Place

West County Trail

Pat Rosend, Liz Cronauer - *Fairfax County Park Authority*

Initiated as a response to a request from a county resident and trail advocate, this map was created to evaluate the resident's proposal for a West County Trail. Staff took the paper mark up and generated an accurate transportation map showing routing issues and concerns. Several high level team meetings were held to determine an appropriate and realistic alignment. Once the alignment was determined, the map with a final route was developed to present to the public. This map also included the proposed new Sully Woodlands trail network and connections to two other established trails networks, the FCPA CCT and the Occoquan Trail. An inset map was developed to show the relationship between the three trail networks and how this new West County Trail section would form the third leg of a 70 mile non-motorized transportation network. This map will continue to be updated and presented to the public for future development opportunities since it shows a list of trail segment gaps that are needed to complete the project.

Second Place

Tysons Park System Concept Plan

Gayle Hooper - *Fairfax County Park Authority*

GIS has contributed extensively in the development of the Tysons Park System Concept Plan. The concept plan is the outgrowth of two years effort by the Park Authority to establish a reference to guide the integration of park spaces in the redevelopment of Tysons. Throughout the process, GIS was instrumental for the analysis of data and the understandable presentations of the results. The final guiding document required a series of clear, coordinated graphics to convey the many aspects of the future park network.

A range of graphics were developed throughout the course of this project including:

- Graphics to support work sessions with citizen advisory group and County staff from a variety of departments
- Analysis of GIS data on planned park spaces by type and district to evaluate the achievement of goals
- Maps that evaluate park service areas by park type to balance availability of park space across the Tysons district
- Graphics for community outreach
- Graphics for final product to convey the integration of all research in a manner that is clear and understandable and visually cohesive

The information developed for this plan will continue to be expanded upon as more and more development occurs in Tysons. The final product in this effort is a 107-page document supported by numerous photographs and drawings and 15 GIS-generated graphics. This document will be used by County staff, developers, engineers, landscape architects, and architects to help bring the vision for a unified park network in Tysons into existence.

First Place

Housing and Population through the Decades in Fairfax County

Paul Maliszewski - *Neighborhood and Community Services*

This infographic takes us through Fairfax County's residential history and where the future may take us. It illustrates how housing and population density has shifted westward across Fairfax County since 1960 and how in the future the county's density will shift to the north, primarily influenced by mixed land use development in Merrifield and Tysons Corner. This information can help users and planners identify how a shifting population may impact where services and programs will be needed throughout the county in the future.

To illustrate how housing and population has shifted, several tools were used. First, choropleth maps are included to show the number of housing units built by decade ranging from before 1960 and forecasted out into the 2020s across Fairfax County. Additionally, a dot density map shows each housing unit (where one dot equals three housing units) that corresponds to the decade it was built by its corresponding color on the color ramp. This dot density map also shows an additional point layer representing the mean center of population since 1960 in ten year intervals out into the year 2040. This mean center of population effectively shows an imaginary point on which a map would balance perfectly if all residents were of equal weight. In congruence with the choropleth maps showing housing by decade built, this helps to illustrate how population has shifted with the movement of housing over time in Fairfax County.

This infographic was intentionally designed to be easy to read and visually appealing to the audience. The color scheme used in this infographic was designed specifically to be visually appealing, but also to meet some ADA standards for compliance. In particular, this brown-turquoise color scheme is color-blind safe for those who have difficulty distinguishing between red and green colors. Red-green color blindness affects approximately 8 percent of men and 0.4 percent of women. Additionally, this color scheme is printer-friendly, which is suitable for desktop color printing and allows users to partially distinguish between the colors as they convert to grey scale. In this infographic, the colors on the color ramp correspond to a particular time period shown on the graph that ranges from before 1960 up to the current year and beyond up to year 2040.

Best Use of GIS for Analysis

Individual/Team Awardees

Third Place

Targeting Accessible Waters for Volunteer Cleanups

John Burke – *Stormwater Management Division of the Department of Public Works and Environmental Services*

Fairfax County is required by its Municipal Separate Stormwater Sewer System permit to monitor and remove "floatables (trash)" from its streams. Volunteer groups assist the county with this task by conducting stream cleanups. Unfortunately, the location and condition of many streams can make access for volunteers difficult or dangerous. Through the use of ArcGIS, this project not only predicts which stream segments in Fairfax County are accessible to volunteers, but also predicts which of those streams are most likely to have large amounts of trash.

To identify potential cleanup sites, a tool was developed to select Fairfax County stream segments based on their size and location relative to certain geological or political features. The tool selects stream segments based on attributes which make volunteer access safe, convenient, and legal. Distance to a major road, size/depth of the stream, access permission, and a number of other variables are all considered. Additionally, the tool utilizes stream cleanup data to exclude any stream segments which have been cleared by volunteers since 2004. Using this model, 2,016 out of 29,302 possible stream segments in Fairfax County have been identified which meet the accessibility requirements.

The tool also estimates the amount of trash in stream segments to match the size and time commitment of various volunteer groups with the amount of trash removal necessary. For this task, the investigator used the storm water complaint dataset as an indicator for the amount of trash in nearby streams. By displaying the location of trash related complaints, it was possible to predict the amount of trash in streams relative to the density of these complaints. Using the Kernel Density tool, the investigator developed a heat map for all locations and frequencies of these complaints. The density of complaints served as a predictor of stream trash. The heat map raster was converted to vector and stream segments within one mile of areas with the highest density of complaints were selected. Of the 2,016 volunteer accessible stream segments, 34 fell into category 5. The map and selections generated from this tool can be consulted by the Watershed Planning and Assessment Branch staff when community service organizations request cleanup sites. Future work on this project will include the use of census data for predicting amounts of trash in streams, as higher population density in a watershed typically coincides with higher amounts of trash in streams.

Second Place

Automating the Blue Books and Run Order Display in the Computer Aided Dispatch System Utilizing GIS Models and Python Scripting.

Christopher McCarthy - *Public Safety Communications*

The Blue Books (Street Locator, Common Place, and Intersection) are a vital component to the operation of Fairfax County's 911 system. These books are an essential backup in case the Computer Aided Dispatch system suffers an outage or whenever the 911 call takers need to operate in manual mode. Producing these books in the past proved to be a challenging endeavor. Correcting the errors in the intersection book and reducing excess records were the primary goals when it was decided that GIS tools, Model Builder and python scripting could solve these problems.

Three models were developed using a variety of spatial tools and methods to solve specific problems with each book. Reducing the number of records in the Street Locator book required grouping the address numbers into a range within the other spatially joined layers. With the intersection book, finding a method to determine all the intersections and remove non-intersecting results was the challenge. The difficulty for the Common Place book occurred in automating the production of the blue book and Run Order Display (ROD) and correcting the data for unacceptable characters while in the native GIS table format.

The improvements made with the GIS modeling and python scripting have made significant impacts to the production of the Blue Books and the updating of the ROD data within the CAD system. The Street Locator books now only have approximately 20,200 records compared to 29,000 previously. The consolidated records means significantly less production costs and also less searching for the call takers which translates into faster dispatch times. Without the GIS Modeling and Python scripting, updates to ROD of the Blue Book data would be time consuming and inefficient

First Place

Development of a GIS Toolkit to support Hydrologic and Water Quality Modeling and drainage area characterization of ecological sampling sites

Joseph P. Riley-Ryan, John Burke - *Stormwater Management Division of the Department of Public Works and Environmental Services*

The Stormwater Planning Division need GIS toolkit for facilitating and streamlining workflows related to drainage area delineation and land use analysis. These analyses are fundamental to the planning, design, and benefit evaluation of projects implemented by SWPD. The data derived from these analyses are used in hydrologic and water quality modeling (HWQM), as well as drainage area characterization of ecological sampling sites to support watershed management efforts in the County. The toolkit developed as part of this project leverages the best available GIS data to support these functions and provides a consistent methodology for performing these analyses. Prior to the development of this toolkit, drainage area characterization and HWQM was completed in a somewhat ad hoc manner with a wide variety of input data and varying levels of GIS-based analyses.

The first step in the creation of the GIS toolkit was the creation of a high resolution digital elevation model (DEM) utilizing the best available countywide terrain data, supplemented with publicly available data outside the county. In order to improve the delineation capability for Green Infrastructure (GI) projects, the stormwater infrastructure (pipes and other conveyance systems) was 'burned' into the DEM, which allowed for explicit accounting of changes in micro-drainage areas due to stormwater conveyance systems. The conditioned DEM was used to generate grids for drainage area delineation, and it was found that this significantly improved the drainage area delineations to GI facilities. A model-builder tool was created to allow users to delineate drainage areas to any point of interest in the County using the new FD and FA grids.

Land use for the toolkit includes the most current planimetric data for imperviousness estimates derived from aerial imagery as well as a more recent land cover layer derived from 2011 satellite imagery. Utilizing model-builder tools for imperviousness estimates in addition to land-cover summaries, both datasets were analyzed to develop a methodology for estimating imperviousness and characterizing land-use. The results showed that the land cover layer provided good estimates of both imperviousness and other land uses of interest, however, a correction factor was necessary to improve the analysis. Model-builder tools were used to randomly sample 60 sites countywide areas with a range of imperviousness values, and the results indicated how impervious values had to be corrected when structures existed below the tree canopy.

Overall, the GIS toolkit has resulted in a more than 50% reduction in the level of effort required to generate input data sets for HWQM and drainage area characterization of ecological sampling sites. The toolkit leverages the best available GIS data and provides a consistent methodology for performing these analyses.

Best Use of GIS for Public Outreach

Agency Winner

Fairfax County Park Authority

A Cultural History Tour of Old Colchester Park and Preserve

Marion Constante, Megan Veness, Jonathon Brisendine, Kayla Marciniszyn, Elizabeth Peebles, Denice Dressel, Julianne Powers, Elizabeth Paynter, Sheila Koons, Jean Cascardi

A Cultural History Tour of Old Colchester Park and Preserve is an interactive story map that represents a new innovation in public outreach by providing more detailed and archaeologically informed data to visitors. The tour stops correspond to interpretive locations currently proposed in the Draft Master Plan. Future visitors to the park will be able to gain a more complete understanding of the cultural history of Fairfax County. Being web based, this vehicle also targets a world-wide audience, offering the ability to interpret the cultural resources at the Old Colchester Park and Preserve to anyone, regardless of their ability to physically visit the park.

The park's history, which spans approximately 10,000 years from the Early Archaic to the early-twentieth century, is told using tour points with images, text, and links, beginning with the earliest occupation to the latest. Research and elements for the web application were contributed by the Cultural Resources Management and Protection Branch of the Fairfax County Park Authority's Colchester Archaeological Research Team (CART), who have been conducting archaeological investigations at the park since 2010.

This application began with the creation of the points and the town plat from the 1754 George West Survey in ESRI's ArcMap, then imported into ArcGIS online along with the text and links to the images within a hosted feature service. Once compiled in ArcGIS online, the map was published using the story map tour template. The template uses basic customizations to the appearance and html code for links and text styles to enhance the visitor experience.

Tour point six, Town Development, is linked to an ArcGIS online CityEngine web scene, where a visitor can interact with a 3D model of the Town of Colchester circa 1780. The structures for the "Virtual Representation of the 18th Century Port Town of Colchester" are all based on archival and archaeological investigations, the terrain was produced from the US Geological Society's 1920 Fort Humphreys and vicinity topographic map, while town roads, fences and outlying buildings were created from the 1782 Rochambeau "Camp' a Colchester" map. The tree types are from botanical samples found in archaeology sites within the park and the number of trees were randomly generated within ArcMap.

The web application tells the story of Old Colchester Park and Preserve from a cultural and historical perspective and the continuing effort by the Colchester Archaeological Research Team to understand, manage, interpret, and preserve the park's cultural history.

Best Use of GIS on the Web
Agency Winner

Neighborhood and Community Services
Demographic Interactive Mapper
Paul Maliszewski

The Demographic Interactive Mapper was created to make current Fairfax County demographic data readily accessible for public and internal users. The web application was designed to be easy for users to explore and download demographic data across Fairfax County at different levels of geography. The data this application provides are being used by different Fairfax County departments and agencies including Transportation, Planning and Zoning, Schools, Human Services, Fire & Rescue among others to help plan for programs and services to fulfill Fairfax County needs. Additionally, the web application has been used by County residents, students, surrounding jurisdictions and governmental agencies. Since publication in June, 2014 the Demographic Interactive Mapper has had about 5,000 web visits.

The Demographic Interactive Mapper summarizes the most current demographic data created by county demographers by Community, ZIP code, and Census Block Group levels across Fairfax County. These data include total population estimates, 5-year population forecasts, commercial gross floor area, and number of housing units by type, age, and market value. The Demographic Interactive Mapper also includes U.S. Census Data through the "Census Explorer" that links to a U.S. Census Bureau. Users can zoom in and out, pan, search by location, select multiple features to summarize data by geography, and export the whole database or selected data.

Most Significant Data Contributor
Agency Winner

Neighborhood and Community Services
Existing Land Use
Fatima Khaja

Existing land use and existing land use maps are used by planners and policymakers in determining where future growth should occur and where facilities and infrastructure may be needed. The primary purposes for automating the creation of the existing land use layer were to make it easier to keep this information up-to-date and to reduce the time it takes to produce an existing land use map. The automated Existing Land Use Layer Tool was built as a module in the Integrated Parcel Lifecycle System (IPLS).

In the past the existing land use layer had to be created manually by using tabular data from Department of Tax Administration (DTA). Each parcel in the DTA database has a designated land use. These data were joined with Fairfax County's GIS spatial data. There are several hundred types of existing land uses and over 400,000 parcels in the DTA database. Because of the large number of specific land use codes, they needed to be categorized into general land use categories and then color coded based on the general use to make them useable for displaying visually in a map.

With the automation of this process through IPLS, the existing land use layer can be created in a matter of minutes whereas the manual process took weeks to complete. The existing land use layer can now be easily updated as new data from DTA are loaded into IPLS and can now be hosted in the GIS DataLoader for all county staff to use.

Best GIS Integration or Application Development
Agency Winner

Fire and Rescue Department

Fairfax County Fire & Rescue Department ArcGIS Online Website

Eric K. Fisher, Shelby D. Zelonis, Keg Good

The Fairfax County Fire & Rescue Department's GIS team is often tasked with fulfilling ad hoc mapping and spatial data requests from their agency personnel. One frequent problem faced by the GIS team is the time-sensitive nature of fire and rescue operations. Fire stations are staffed 24/7, and the GIS team is not always available to address issues when they arise. Firefighters need to be able to quickly access maps and information, such as the locations of fire hydrants near an incident. To accomplish these types of needs at an appropriate scale, the GIS team could make thousands of paper maps to cover the entire county. Because the data is constantly changing, however, it becomes a difficult and futile effort for GIS staff to produce and communicate changes to paper maps quickly enough for those in the field.

Another difficulty that the GIS team faces is the large number of requests that they receive. With 38 fire and rescue stations serving a county of over 1.1 million people, the amount of requests can be significant. Typically, these requests are for similar information for different areas of the county. Fulfilling these needs is often a manual and time-consuming process, and can lead to additional questions and requirements. For example, creating and providing a pdf map of one fire box boundary may lead to further requests for maps of the neighboring boundaries, and so on.

To solve these problems and more, the GIS team created an ArcGIS Online website for their personnel to access commonly requested GIS data. At this site, Fire and Rescue Department staff can access a suite of web mapping applications that allow them to:

1. Find, zoom to, and map any fire box boundary of interest without needing to request a paper or pdf map. Other agencies (e.g., DPSC) can also access this ever-changing data without the hassle of setting up shared network drives or emailing large files.
2. Collect, update, and view hydrant locations using ArcGIS Collector.
3. View and filter incidents that have occurred within the county.
4. Access planning and analysis tools (e.g., service area boundaries, demographic data, and incident data).
5. Take a map tour of all 38 stations in Fairfax County.
6. Perform training exercises (i.e. – "street drills"). Firefighters can practice their knowledge of their primary area of responsibility (first due) via the use of an unlabeled street layer, saving them from having to create their own training aids of hand-drawn maps and PowerPoint presentations to test themselves.

All of Fire & Rescue Department staff have access to the web mapping application. They do not need previous GIS experience to find and view the information that they require, and they no longer have to wait for the GIS team to produce their common mapping and spatial data requests. This new workflow is beneficial for the GIS team, too, as they now have more time available to focus on their core GIS projects and data efforts.

Most Significant Progress
Agency Winner

Land Survey Branch of the Department of Public Works and Environmental Services

Vickie McEntire Anglin, Yilia Vega-Claudio, Michael Perry, Chris Jensen

Creating a Survey Quality Cadastre

The existing parcel (property boundary) GIS layer is remarkably accurate when considering the historic methods of compilation. The parcel data is used by virtually every GIS user, engineer, surveyor, planner, realtor, District Supervisor, tax administration staff, and even many residents use the parcel layer (whether or not they realize this). Land Survey Branch (LSB) leadership envisioned improving users' experience with the cadastre (an official register of the ownership, extent, and value of real property in a given area) through increasing its accuracy with survey quality data. Finally, all the pieces are in place for the Land Survey Branch plan to share survey quality cadastral solutions with the GIS branch to insure a future of a continually improving parcel layer in Fairfax County.

In 2003, LSB began conducting engineering design, construction, and as-built surveys for the Capital Improvements Program (CIP) projects. Over the last 10 years, to further its GIS goals, LSB added a position focusing on GIS, built skills, and created processes for tracking, converting, and sharing a survey quality cadastre with GIS. Today, LSB georeferences all of the CIP surveys to make them readily accessible for users of the County's GIS.

LSB created a GIS Layer as the key for a spatial filing system of some 800 survey projects across the County, all of which have professional boundary analysis solutions. They are converting those projects from AutoCAD survey data to ESRI's GIS format through a process devised through collaboration of GIS and LSB. Thus, LSB is using agency information created during the initial surveys for CIP projects to build this layer. This is a win-win for Fairfax—LSB has a spatial filing system and GIS has significant new data to work with.

Field surveyed property and right-of-way markers supports analysis of the fit of deed records to the real world. For each project, LSB analyzes deeds for the legal reconstruction of intent under survey case law, and computes a property mosaic in AutoCAD using the field evidence. They assign a "quality weighting factor" to all field and record evidence at the analysis stage and export that over to the GIS database as metadata during edits. Computed deed lines and found evidence "points" go into the *Survey Parcel Layer* to build a better parcel fabric. Surveyed parcels on state plane grid will replace graphic depictions of the parcels. Tightening the existing Parcel Layer to the survey data will create a more accurate cadastre for every GIS user and every published map containing property data.